

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
8 February 2001 (08.02.2001)

PCT

(10) International Publication Number  
**WO 01/09868 A1**

(51) International Patent Classification<sup>7</sup>: **G09F 13/20**

(21) International Application Number: PCT/CA00/00874

(22) International Filing Date: 27 July 2000 (27.07.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
09/361,978 28 July 1999 (28.07.1999) US

(71) Applicants and

(72) Inventors: **TURK, David, A.** [CA/CA]; 57 Palmerscon Drive, Thornhill, Ontario L4J 7V9 (CA). **ANDREWS, Dean, T.** [US/US]; 910 South Michigan Avenue, Unit 804, Chicago, IL 60605 (US).

(74) Agent: **BERESKIN & PARR**; 40th Floor, 40 King Street West, Toronto, Ontario M5H 3Y2 (CA).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

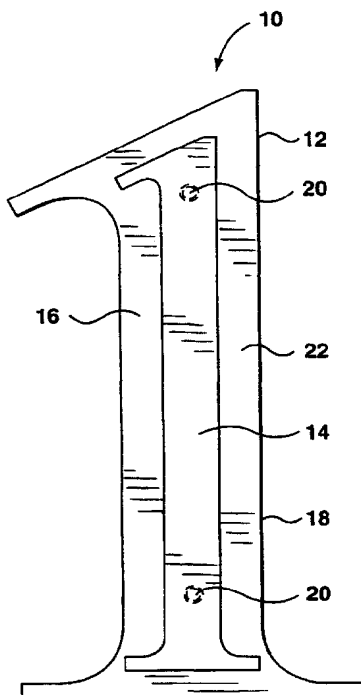
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— With international search report.

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: LUMINESCENT DISPLAY DEVICE



(57) **Abstract:** A device for displaying identifying indicia resembling alphanumeric characters or symbols for use on signs, or which may be placed on houses or buildings to indicate their location on a street. The device comprises a substrate made of a metallic alloy or other material, and a top layer of luminescent material. The visible portion of the top surface of the substrate resembles the identifier to be displayed and can be easily seen in daylight, while the layer of luminescent material which also resembles the identifier can be easily seen in the dark.



WO 01/09868 A1

- 1 -

**Title: LUMINESCENT DISPLAY DEVICE**

**FIELD OF THE INVENTION**

This invention relates to devices for displaying addresses and other identifying indicia, and more particularly, to house numbers which  
5 are visible in the dark.

**BACKGROUND OF THE INVENTION**

Most buildings have affixed to their exterior some means of identifying their address. This is typically done using one or more large numbers identifying the street number of the building, which can be seen  
10 by drivers or passers-by who may be looking for a building corresponding to a given street address. It is also common to find other identifying indicia on buildings, including the name of a commercial building or the names of tenants of a commercial building, a street name, or surnames of the residents of a house. Further, a combination of letters, numbers and  
15 symbols may appear on a sign constructed to be easily viewed by the public.

Currently, many house numbers are constructed of a shiny, non-corrosive, metallic alloy such as brass. These devices are relatively inexpensive, sturdy, weather-resistant and easily visible by drivers and  
20 passers-by in the daylight. Some house numbers are made of other materials, affixed to a backing typically of a contrasting colour, or may simply be painted onto a sign or wall. However, these prior art numbers are not very visible in the dark.

There exist various devices for identifying addresses of  
25 houses and buildings which are visible at night, including U.S. Patent No. 5,408,773 issued to Hwang on April 25, 1995, U.S. Patent No. 4,951,405 issued to Sabala on August 28, 1990, U.S. Patent No. 4,903,172 issued to Schöniger et al. on February 20, 1990, U.S. Patent No. 4,373,284 issued to Crane on February 15, 1983, U.S. Patent No. 4,272,901 issued to Matthews

- 2 -

on June 16, 1981, U.S. Patent No. 4,254,257 issued to Lordier on March 3, 1981, U.S. Patent No. 4,009,535 issued to Stock on March 1, 1977, and U.S. Patent No. 3,864,861 issued to Hill, Jr. on February 11, 1975. However, all of these devices require an electrical or photoelectric energy source to  
5 illuminate the identifying indicia or display unit. Most of these prior art devices contain many components which can make the movement or installation of the device cumbersome. These devices may also be bulky and boxy looking which may make their appearance unattractive.

The device of Whitehouse disclosed in United Kingdom  
10 Patent Application GB 2,250,636 is a building identification means made of a supporting substrate which surface is coated with a material that glows in the dark. However, while the glowing material may allow for greater visibility in the dark, this device is inferior to other devices made of brass with regards to durability, visibility in the daylight, and attractiveness.

15 There is accordingly a need for a device for displaying identifying indicia which is easily visible during the day and at night, which is durable and attractive, and which does not require an electrical energy source.

### SUMMARY OF THE INVENTION

20 The invention provides for a device for displaying identifying indicia comprising a substrate shaped to resemble an alphanumeric character, the substrate having a top surface being made from a material visible in the presence of light, having a top surface and a top layer of luminescent material in the shape of the same character, with  
25 the top layer covering only a part of the top surface of the substrate thereby leaving the remainder of the top surface uncovered.

The top layer is preferably inlaid in the top surface of the substrate, which is preferably made of brass. The luminescent material is preferably a photoluminescent material which absorbs energy in the

- 3 -

presence of light, and emits light in the dark.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

The present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

5                   Figure 1 is a top plan view of a device for displaying the numeral "1" in accordance with the preferred embodiment of the present invention;

                  Figure 2 is a side elevational view of the device shown in Figure 1;

10                  Figure 3 is a top plan view of a device for displaying the numeral "1" in accordance with an alternative embodiment of the present invention; and

                  Figure 4 is a side elevational view of the device shown in Figure 3.

### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

15                  Referring to Figures 1 and 2, illustrated therein is a device for displaying identifying indicia shown generally as 10, made in accordance with the preferred embodiment of the invention. Display device 10 comprises a substrate 12 which is shaped to resemble a specific identifier to be displayed, and a top layer of luminescent material 14. The term  
20                  "luminescent material" as used herein, refers to materials capable of glowing in the dark, including photoluminescent and phosphorescent materials, which absorb energy in the presence of light and subsequently emit light in the dark.

25                  As shown in Figure 1, substrate 12 comprises top surface 16 and side walls 18, which are shaped to resemble the number "1". Substrate 12 typically takes the shape of a single alphanumeric character, but it may also take the shape of a combination of two or more alphanumeric

- 4 -

characters. Alphanumeric characters include upper case and lower case alphabetical characters, numbers, or symbols. The alphanumeric characters may taken on different shapes, sizes, fonts, and designs, and the numbers and symbols may have origins in languages other than English.

5                   Substrate 12 is composed of a solid material visible in the presence of light, such as a coloured plastic, wood, metal or metallic alloy. In the preferred embodiment of the present invention, substrate 12 is composed of brass. The dimensions of substrate 12 will vary depending on the application of the present invention. For example, if display device 10  
10                   were to be affixed to the exterior of a house, substrate 12 may have a height of about six inches, a width of about three inches, and a thickness of about one-half of an inch.

                  Substrate 12 may contain one or more bores 20 on the bottom surface which can be used to mount device 10 onto a wall or sign on  
15                   which pegs, nails, screws or the like are embedded. The depth of bores 20 will vary, and will typically be one-half the thickness of substrate 12. Alternatively, bores 20 may be constructed to extend through to the top surface of substrate 12. Other alternative means of mounting device 10 onto a wall or sign may be available.

20                   Top layer of luminescent material 14 also resembles the shape of the specific identifier to be displayed. Top layer 14 is preferably inset from the side walls 18, and covers only a central portion of substrate 12 leaving the outer edges of top surface 16 of substrate 12 visible, thereby forming a border 22 which is an outline of the shape of the specific  
25                   identifier to be displayed. Top layer 14 in the shape of the specific identifier to be displayed allows the identifier to be seen easily in the dark, while the visible border 22 of substrate 12 in the shape of the specific identifier allows the identifier to be easily recognized in daylight.

                  Preferably, top layer 14 is inlaid in groove 24 in top surface 16  
30                   of substrate 12, and has a thickness identical to the depth of groove 24,

- 5 -

such that the top surface of layer 14 is flush with top surface 16 of substrate 12. This results in a device 10 having a level top surface.

Top layer 14 is preferably composed of a plastic embedded with a photoluminescent pigment such as ProGlow's Nightlight20 (Trade  
5 Mark) pigment powder, which is affixed to substrate 12 by a suitable adhesive. ProGlow's Nightlight20 pigment powder emits a light, yellowish-green colour in the dark, and may appear yellow or white in the daytime. ProGlow's Nightlight20 is said to glow for 20 hours at a minimum luminosity of 46 mcd/m<sup>2</sup> after exposure to any light source for  
10 10 minutes, and can reach a luminosity as high as 1794 mcd/m<sup>2</sup> immediately after removal of the light source. Furthermore, such pigment powder withstands most chemicals and functions normally outdoors under severe environmental conditions, which make it suitable for use in the construction of the present invention. The plastic may be  
15 made with a resin such as DuPont's Surlyn® ionomer resin, which produces a clear, durable plastic. Alternatively, top layer 14 may comprise a photoluminescent powder mixed in with a paint or other base to be applied directly, or indirectly through an intermediate substrate, onto substrate 12.

20 Referring now to Figures 3 and 4, shown therein is a device 30 made in accordance with an alternative embodiment of the invention. Device 30 comprises a substrate 32 and a top layer of luminescent material 34 both resembling a specific identifier to be displayed. Substrate 32 comprises a top surface 36 and side walls 38. In this embodiment of the  
25 invention, top layer 34 covers a peripheral portion of substrate 32, leaving a central portion of top surface 36 of substrate 32 exposed. Top layer 34 forms an outline of the identifier to be displayed. Top layer 34 allows the identifier to be seen easily in the dark, while the exposed central portion of top surface 36 of the substrate 32 allows the identifier to be easily  
30 recognized in daylight. Substrate 32 may contain one or more bores 40 on

- 6 -

the bottom surface which can be used to mount the device onto a wall or sign. Top layer 34 is preferably inlaid in groove 44 in top surface 36 of substrate 32, such that top surface of layer 34 is flush with top surface 36 of substrate 32.

5                   Display device 10 can be easily mounted onto the exterior of a building or on a sign. Device 10 is also durable and attractive, and is easily visible during the day and at night, and does not require an electrical energy source.

10                   It should be apparent to those skilled in the art that while the layer of luminescent material is preferably inlaid in a groove in the top surface of the substrate mounted flush with the top surface of the substrate, the thickness of the top layer of luminescent material could be greater or less than the depth of the groove. Furthermore, the top layer may be applied to the top surface of the substrate using an adhesive.

15                   Alternatively, the layer of photoluminescent material could be painted onto the top surface of substrate although this construction would not be as durable or attractive as the preferred embodiment.

                  It should therefore be understood that various modifications can be made to the preferred and alternative embodiments described

20                   herein without departing from the subject invention, the same of which is defined in the appended claims.

- 7 -

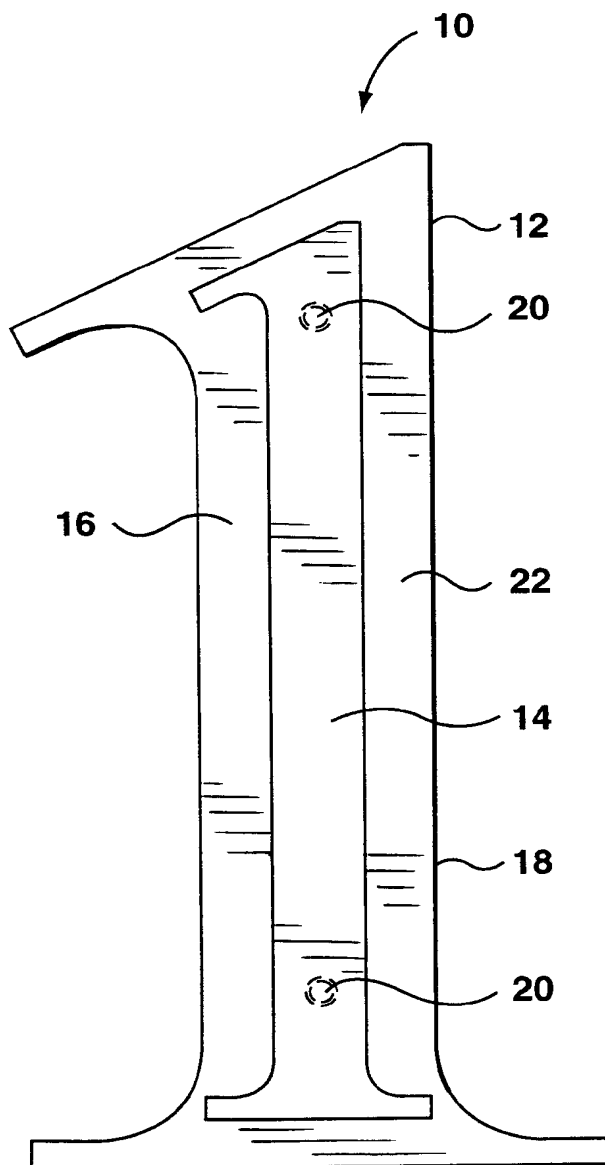
**WE CLAIM:**

1. A device for displaying identifying indicia, comprising:
  - a) a substrate configured to resemble an alphanumeric character, the substrate having a top surface and being made of a material visible in the presence of light; and
  - b) a top layer in the shape of said character, the layer being made of a luminescent material visible in the dark, the layer covering a first portion of the top surface of the substrate, leaving a second portion of the top surface of the substrate uncovered.
2. The device defined in claim 1, wherein the luminescent material is a photoluminescent material which absorbs energy in the presence of light, and emits light in the dark.
3. The device defined in claim 1, wherein the first portion comprises a central portion of the top surface of the substrate.
4. The device defined in claim 1, wherein the first portion comprises a peripheral portion of the top surface of the substrate.
5. The device defined in claim 1, wherein the top layer is inlaid in the top surface of the substrate.
6. The device defined in claim 5, wherein the top layer has a top surface flush with the top surface of the substrate.
7. The device defined in claim 3, wherein the substrate has side walls, and the top layer is inset from the side walls of the substrate.

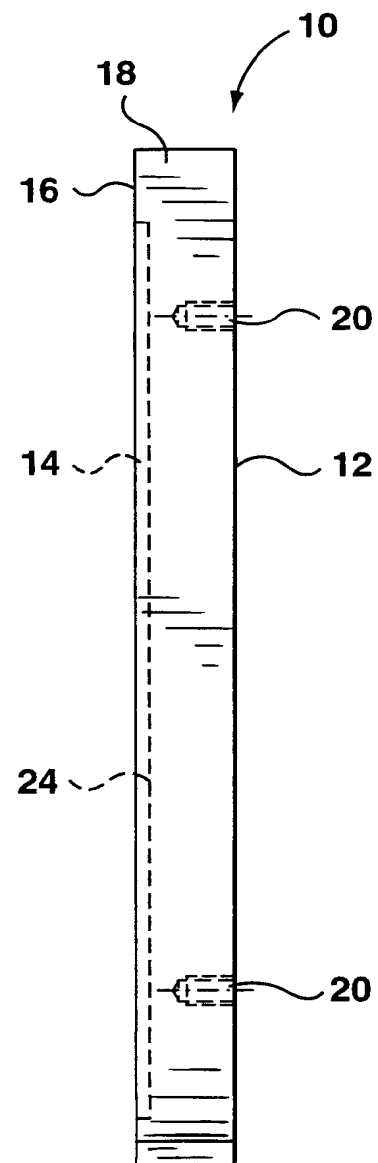


- 8 -

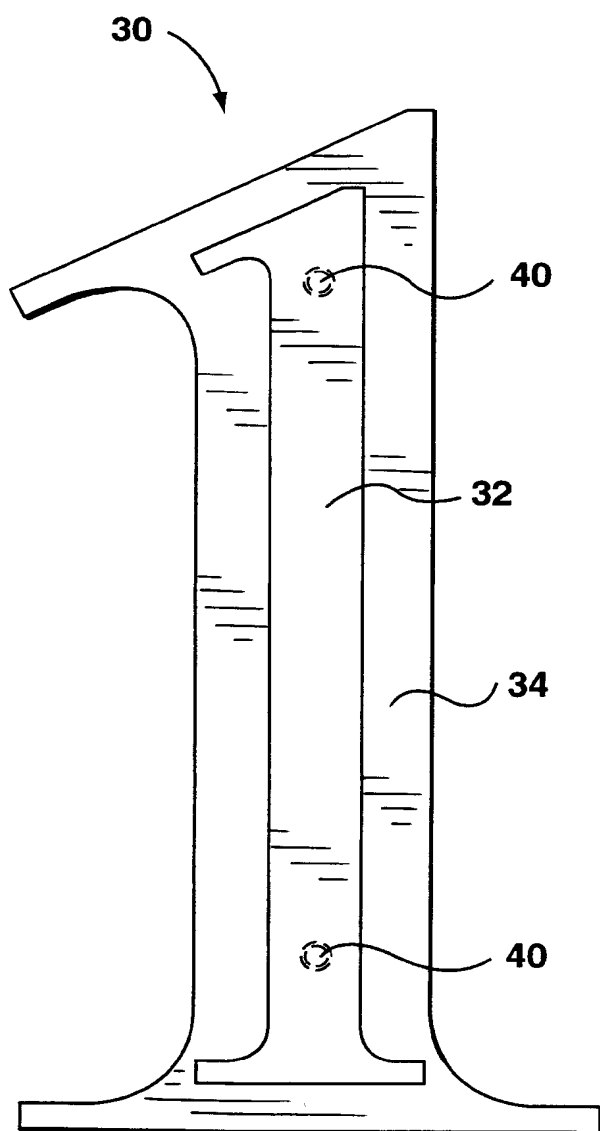
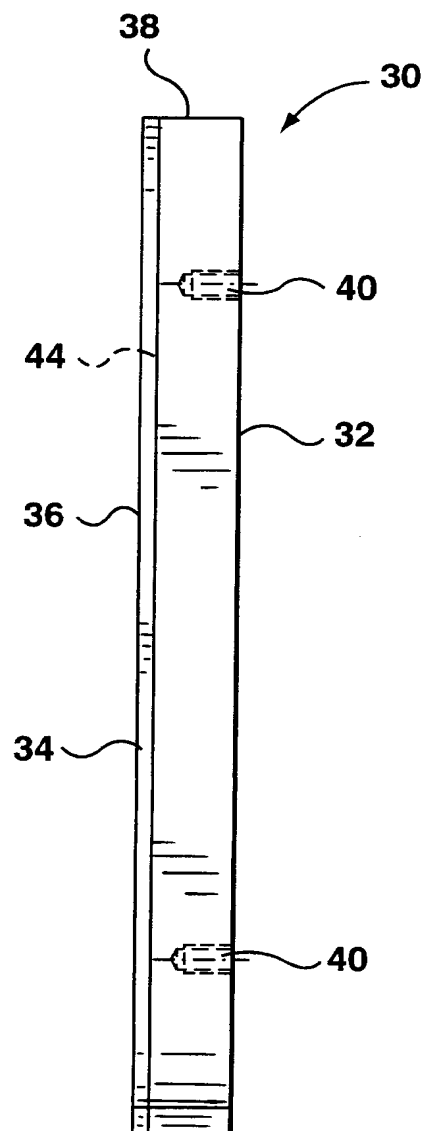
8. The device defined in claim 1, wherein the substrate is made from a metallic material.
9. The device defined in claim 8, wherein the metallic material is brass.
- 5 10. The device defined in claim 3, wherein the top layer is made from a plastic embedded with a photoluminescent material.



**FIG. 1**



**FIG. 2**

**FIG. 3****FIG. 4**

# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/CA 00/00874

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 G09F13/20

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G09F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE 27 09 244 A (BOHMANN JOSEPH) 7 September 1978 (1978-09-07) the whole document	1-8,10
Y	WO 97 43746 A (BJOERN PER OLE) 20 November 1997 (1997-11-20) the whole document	1-8,10
A	FR 2 629 240 A (MOORE AUSTEN) 29 September 1989 (1989-09-29) claims; figures	1-10
A	DE 20 45 215 A (KAYSER E) 16 March 1972 (1972-03-16) claims; figures	1-10
A	US 3 591 942 A (SWEARINGEN EARL C VAN) 13 July 1971 (1971-07-13)	
	-/-	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

13 September 2000

Date of mailing of the international search report

21/09/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Gallo, G

# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/CA 00/00874

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 93 01581 A (NEOSIGN AS) 21 January 1993 (1993-01-21) -----	

# INTERNATIONAL SEARCH REPORT

i. Information on patent family members

International Application No

PCT/CA 00/00874

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 2709244	A	07-09-1978	NONE	
WO 9743746	A	20-11-1997	NO 962027 A AU 2794797 A	17-11-1997 05-12-1997
FR 2629240	A	29-09-1989	DE 3908920 A GB 2216705 A,B	05-10-1989 11-10-1989
DE 2045215	A	16-03-1972	NONE	
US 3591942	A	13-07-1971	NONE	
WO 9301581	A	21-01-1993	NO 174729 B AU 662347 B AU 2346892 A DE 9218887 U DE 69222529 D DE 69222529 T EP 0594765 A JP 7501406 T KR 210521 B US 5585160 A	14-03-1994 31-08-1995 11-02-1993 25-01-1996 06-11-1997 16-04-1998 04-05-1994 09-02-1995 15-07-1999 17-12-1996